THE FOLLOWING ARE THE ENGLISH TRANSLATION OF ANNEXES TO THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (ARTICLE 34):

Amended Sheets (Pages 14-16)

Claims

1. A catalyst which formally comprises zirconium dioxide (ZrO_2), yttrium oxide (Y_2O_3) and at least one oxide selected from among alkali metal oxides and alkaline earth metal oxides and in which the proportion of zirconium dioxide (ZrO_2) is from 80 to 99 parts by mass, the proportion by mass of yttrium oxide (Y_2O_3) is from 0.5 to 10 parts by mass and the proportion of alkaline earth metal oxide and/or alkali metal oxide is from 0.1 to 3 parts by mass.

2. The catalyst as claimed in claim 1, wherein the proportion of zirconium dioxide (ZrO_2) is from 90 to 98 parts by mass, the proportion by mass of yttrium oxide (Y_2O_3) is from 1.5 to 8 parts by mass and the proportion of alkaline earth metal oxide and/or alkali metal oxide is from 0.5 to 2 parts by mass.

3. The catalyst as claimed in claim 2, wherein the proportion of zirconium dioxide (ZrO_2) is from 93 to 96 parts by mass, the proportion by mass of yttrium oxide (Y_2O_3) is from 3.5 to 6 parts by mass and the proportion of alkaline earth metal oxide and/or alkali metal oxide is from 0.5 to 1 part by mass.

4. The catalyst as claimed in at least one of claims 1 to 3 which comprises an alkali metal oxide selected from among potassium oxide and sodium oxide.

5. The catalyst according to at least one of claims 1 to 3 which is in the form of granules, tablets, cylinders, rings or extrudates.

6. A process for preparing 1-olefins by catalytic dehydration (elimination of water) of alcohols at a temperature from 200 to 450 °C, in which a catalyst as claimed in any of claims 1 to 5 is used as catalyst and at least one secondary 2-alcohol or a mixture thereof is used as alcohol.

7. The process as claimed in claim 6, wherein at least one alcohol having from 5 to 27 carbon atoms is used.

8. The process as claimed in claim 7, wherein 2-hydroxyoctane is used as alcohol.

9. The process as claimed in at least one of claims 6 to 8, wherein a mixture comprising further alcohols and/or hydrocarbons and also, if desired, a diluent is used.

10. The process as claimed in at least one of claims 6 to 9, wherein the dehydration is carried out in the gas phase or the mixed liquid/gas phase.

11. The process as claimed in at least one of claims 6 to 10, wherein ketones are separated off and hydrogenated from the mixture obtained in the dehydration and the alcohols obtained are recirculated to the dehydration.

12. A composition which comprises at least one 1-olefin and is obtainable by a process as claimed in at least one of claims 6 to 11 in which the reaction product mixture from the dehydration is separated into an olefin fraction, an alcohol-containing fraction and one or more fractions comprising by-products, wherein the composition comprises 1-octene in a proportion of above 90% by mass.

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13. The use of a composition as claimed in claim 12 for preparing aldehydes and/or alcohols by hydroformylation of the 1-olefin present in the composition.

14. The use as claimed in claim 13 for preparing plasticizer alcohols.

15. The use as claimed in claim 13 for preparing isononanol.

16. The use of a composition as claimed in claim 12 as comonomer for preparing polyolefins.

Abstract:

The present invention relates to a process for preparing 1-olefins from 2-hydroxyalkanes by catalytic elimination of water under nonisomerizing conditions and to a catalyst which is particularly well-suited for this process and formally comprises yttrium oxide (Y_2O_3), zirconium dioxide (ZrO_2) and an alkali metal oxide and/or alkaline earth metal oxide.